

**Notice of Allowability**

Application No.	Applicant(s)	
10/822,996	MUTHUKRISHNAN ET AL.	
Examiner	Art Unit	
Cheryl Lewis	2167	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTO-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1.  This communication is responsive to the applicants' communication filed on January 8, 2007.
2.  The allowed claim(s) is/are 4 and 6-11, renumbered as claims 1-7.
3.  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a)  All
  - b)  Some\*
  - c)  None of the:
  1.  Certified copies of the priority documents have been received.
  2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3.  Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4.  A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5.  CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
  - (a)  including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
    - 1)  hereto or 2)  to Paper No./Mail Date \_\_\_\_\_.
  - (b)  including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6.  DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1.  Notice of References Cited (PTO-892)
2.  Notice of Draftsperson's Patent Drawing Review (PTO-948)
3.  Information Disclosure Statements (PTO/SB/08),  
Paper No./Mail Date 4/13/04
4.  Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5.  Notice of Informal Patent Application
6.  Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_.
7.  Examiner's Amendment/Comment
8.  Examiner's Statement of Reasons for Allowance
9.  Other \_\_\_\_\_.

**DETAILED ACTION**

1. Claims 4 and 6-11 are allowed. These claims have been renumbered as claims 1-7.
2. Claims 1-3, 5, and 12-20 have been cancelled in the amendment received on January 8, 2007.

***Drawings***

3. The drawing filed on April 13, 2004 are accepted by the examiner.

**EXAMINER'S AMENDMENT**

4. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in an interview with Jeffrey Weinick on March 28, 2007.

5. Claims 4 and 6-8 have been amended as follows:
  4. (Currently Amended) A computer implemented method of maintaining a multidimensional histogram for a data array having a data array size, the method having a processing time substantially less than proportional to the data array size, the method comprising:

receiving a data update that indicates a change to data in the data array;  
with the data update, updating an intermediate data structure having a size  
substantially smaller than the data array size, so that the updated intermediate data  
structure remains an at-least-approximate representation of the data in the data array  
as changed by the data update;

collecting a number of substantially-largest-coefficient linear combinations of  
then-current data, the number being small compared with the data array size; and

forming the multidimensional histogram as a histogram to an intermediate data  
array re-synthesized from the collected linear combinations; wherein the intermediate  
data structure constitutes a histogram sketch of the data that includes one or both of:

an identification sketch of linear combinations of the data, the identification  
sketch being configured to identify, with impliedlimited error, linear combinations whose  
coefficients are large; and

a count sketch of linear combinations of data, the count sketch being  
configured to approximate the coefficients of linear combinations.

6. (Currently Amended) A computer implemented method of maintaining a  
multidimensional histogram for a data array having a data array size, the method having  
a processing time substantially less than proportional to the data array size, the method  
comprising:

receiving a data update that indicates a change to data in the data array;  
with the data update, updating an intermediate data structure having a size  
substantially smaller than the data array size, so that the updated intermediate data

structure remains an at-least-approximate representation of the data in the data array as changed by the data update;

collecting a number of substantially-largest-coefficient linear combinations of then-current data, the number being small compared with the data array size;

forming the multidimensional histogram as a histogram to an intermediate data array re-synthesized from the collected linear combinations; and

reducing the collection of linear combinations before forming the multidimensional histogram, by discarding a linear combination according to a criterion belonging to a group of criteria including:

- a) a square of a largest coefficient of a discarded linear combination is small compared with a sum of squares of coefficients of all discarded linear combinations;
- b) a square of a largest coefficient of a discarded linear combination is small compared with a sum of squares of a difference between a then-current data and an array represented by a collection of retained linear combinations; and
- c) a square of a largest coefficient of a discarded linear combination is small compared with a sum of squares of a difference between a then-current data and an array represented by a collection of retained linear combinations, the sum of squares being approximated using a sum-of-squares sketch.

7. (Currently Amended) A computer implemented method of maintaining a multidimensional histogram for a data array having a data array size, the method having

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a processing time substantially less than proportional to the data array size, the method comprising:

receiving a data update that indicates a change to data in the data array;

with the data update, and updating an intermediate data structure having a size substantially smaller than the data array size, so that the updated intermediate data structure remains an at-least-approximate representation of the data in the data array as changed by the data update;

collecting a number of substantially-largest-coefficient linear combinations of then-current data, the number being small compared with the data array size; and

forming the multidimensional histogram as a histogram to an intermediate data array re-synthesized from the collected linear combinations;

wherein the step of updating the intermediate data structure includes combining plural pre-intermediate data structures, each of which may not itself be a faithful representation of the data in the data array.

8. (Currently Amended) A computer implemented method of preparing a multidimensional histogram for a data array, the data array characterized by a data array size and including data, the method having an execution time proportional to the data array size and using an amount of storage space substantially smaller than the data array size, the method comprising:

receiving data from the data array;

transforming the data into linear combinations of data items, or of approximations of the linear combinations of data items;

collecting a moderate number of substantially-largest coefficient linear combinations of the data; and

forming the multidimensional histogram as a histogram to the collected linear combinations.

### **REASONS FOR ALLOWANCE**

6. The following is a statement of reasons for the indication of allowable subject matter:

Applicants' response filed on October 5, 2006 overcomes the prior art rejection under 35 USC § 103(b) by Abdel-Mottaleb and Chakrabarti.

The prior art of record does not render obvious to one ordinarily skilled in the art at the time of applicant's invention nor anticipate the combination of claimed elements including 'installing a plug-in to modify a source control tool of the configuration management environment to include a renaming utility, wherein the source control tool did not provide tracking of version history for files that have been renamed prior to installing the plug-in' and 'matching the first file to a second file using the renaming utility, wherein the second file is a previous version of the first file having a different name, wherein the different name does not follow a versioning feature of the source control tool for the first file, wherein a version tracking history does not exist between the first file that has been renamed and the previous version of the first file' as recited in independent claim 1 and similarly recited in independent claims 6, 14, 17, 25, and 33.

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The remaining claims, 2-5, 7-13, 15, 16, 18-24, 26-32, and 34 are dependent claims, thus these claims are patently distinct over the art of record for at least the above reasons.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

#### **NAME OF CONTACT**

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cheryl Lewis whose telephone number is (571) 272-4113. The examiner can normally be reached on 6:30-3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Cottingham can be reached on (571) 272-7079. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

(571) 273-4113 (Use this FAX #, only after approval by Examiner, for "INFORMAL" or "DRAFT" communication. Examiners may request that a formal paper/amendment be faxed directly to them on occasions.).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist/ Technology Center (571) 272-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>.

Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Cheryl Lewis  
Patent Examiner  
March 28, 2007